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Conference Abstract

Spatial Visualization of Publicly Accessible Species Occurrence Data

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Abstract

The Coastal and Ocean Information Network Atlantic's (COINAtlantic) mission is to promote, facilitate and influence information management, policies and programs that enhance Integrated Coastal and Ocean Management (ICOM) in Atlantic Canada. A project to support this mission has been underway since 2014 with principle funding from the Atlantic Ecosystem Initiative (Environment and Climate Change Canada) and in the last year also from the Department of Fisheries and Ocean to rescue and make accessible to the public and other researchers, species occurrence data using the Ocean Biogeographic Information System Canada (OBIS Canada) Information Publishing Tool (OBIS Canada IPT).

Over 300 data resources of marine species occurrences were identified and cataloged and prioritized for processing according to OBIS standards.

Using on-line tools developed by COINAtlantic and modified for this project, the data resources published by the project to the OBIS Canada IPT and all the other public data resources were made available as internet searchable web mapping services.

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Once a day, a scripted process interrogates the OBIS Canada IPT data resources and builds an Open Geospatial Consortium (OGC) Web Mapping Service using MapServer (http://mapserver.org), one map layer for each data resource, and a KML file that provides a bounding box and linkages to the full data resource and metadata on the OBIS Canada IPT. MapServer is an Open Source platform for publishing spatial data and interactive mapping applications to the web.

The KML files are searchable on the internet and the WMS is available for use by any capable GIS system with access to the internet.

A customized version of the COINAtlantic Search Utility (CSU) (http://coinatlantic.tools/csu/?mapset=acmsd2015) has been developed to visualize the map layers generated by the process (see Fig. 1. The CSU is a search engine which uses the Google Search API to crawl its index for related spatial data in KML and WMS (Web Mapping Service) format, and then displays the results (Boudreau 2014). The CSU also generates an internal data base of WMS and KML spatial data resources from the search results. This data base can be searched as an alternative to searching with the Google Search API (there are over 3,400 records in the data base pointing to remote geospatial services). This customized CSU uses map legends for each map layer that are automatically generated by the process described above and permits the interrogation of any species occurrence location to see the full IPT data record for that location. The CSU enables the user to add any other WMS that is found by using the tool's search function or known to the user so that the species occurrence data can be viewed in its spatial and / or environmental context.

Figure 1.

A partial screen grab (search windows are absent) of the customized CSU showing the map layer "Bottom fauna of Saint John Harbour" (green dots) with the detailed topographic map layer provided to the internet by the Province of New Brunswick.

Future developments include the possible deployment of the process to IPTs other than the OBIS Canada IPT, the publication of OGC compliant Web Feature Services that would permit the user to stylize and analyze the data in their own GIS environment, the improvement of the legends generated by the automatic legend generation process,

expanding the richness of the metadata displayed in the "Additional Layer Information" window, and exposing the CSU's internal data base to internet searches using the OGC compliant standard Catalog Service on the Web (CSW).

Keywords

Spatial data accessibility, visualization, open source software, web mapping service

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